

A Priori Bounds for Elliptic Differential Inequalities via Regularity Estimates

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Keywords: uniformly elliptic PDE, weak Harnack inequality, quantitative strong maximum principle, boundary estimates, a priori estimates

We prove boundary versions of some basic estimates from the regularity theory of uniformly elliptic PDE, such as growth lemmas and half-Harnack inequalities.

We show how such estimates can be used to obtain new and optimal a priori bounds for positive sub- and super-solutions of a class of elliptic equations, both in divergence and in non-divergence form, involving a superlinear nonlinearity.

We apply the a priori bounds in order to study the existence and multiplicity of solutions of the Dirichlet problem for a general class of elliptic operators in which the first and the second order terms have the same scaling with respect to dilations.

References

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